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University of California
College of Agriculture
Agricultural Experiment Station
Berkeley, California

SEASONAL LABOR NEEDS FOR CALIFORNIA CROPS

COLUSA COUNTY

Progress Report No. 6

by


R. L. Adams

Preliminary -- Subject to Correction

December, 1936

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Progress Report No. 6

Seasonal Labor Needs for California Crops
Colusa County

Scope of Presentation.--- The following considerations govern the presentation of this progress report:

1. The data are confined to the area indicated above.
2. The data are confined solely to crops, livestock needs being ignored.
3. The findings apply only to occasional or seasonal labor requirements as distinguished from labor contributed by farm operators and by workers employed on a year-round or regular basis of employment.
4. Attention is concentrated upon workers required for hand tasks -- planting, thinning, weeding, hoeing, and harvesting -- without including teamsters, tractor drivers, irrigators, and shed packers of vegetables or fruits.
5. The presentation includes the so-called migratory, transient, or roving workers which comprise an important source of help needed in connection with certain tasks and at "peak" times which seasonally arise in connection with many field, truck, and fruit crops commercially produced in California.
6. This report is confined to California's need for seasonal agricultural workers because of the more pressing problems liable to arise in connection therewith. A later study is planned which will deal with other kinds of labor involved in the production of California's many crops.

Brief Description of the Area.--- Colusa County is located on the western side of the Sacramento Valley about midway between the northern and southern extremities of the valley. With the exception of the northeast corner, which extends east to Butte Creek, the entire county lies on the west side of the Sacramento River, which forms its eastern boundary. It is bounded by Glenn County on the north, Lake County on the west, and Yolo County on the south. Only the eastern half of the county is devoted to farming, the western half being hilly and generally of little agricultural value.

The agriculture of the county includes both fruit and field crops. Fruit production is confined to the area which lies just west of Arbuckle, College City, and Williams on the edge of the foothills and extends from the northern boundary south to Yolo County. The extensive farming section devoted to field crops is located along the Sacramento River. It comprises an area about 10 to 15 miles wide extending the entire length of the county. This area of gently sloping valley-floor land is devoted to extensive grain and rice production. Rice is produced in the lowlands of the Colusa basin while the major part of the area contiguous to these lowlands is devoted to dry-grain farming, barley being the fundamental crop.

The United States Census of 1935 reports 316,036 of the 729,600 acres in the county as available for crop land, and makes the following further classification.

	<u>Acreage</u>
Crop land harvested	184,793
Crop failure	787
Crop land idle or fallow	51,439
Plowable pasture	79,017
Total land available for crops	<u>316,036</u>

Crops, Acreages, and Production.-- The basis used in calculating occasional or seasonal need for labor other than that furnished by farm operators and regularly employed workers appears as table 1.

TABLE 1

Basis for Calculating Seasonal Labor Requirements
Colusa County

Crops	Acreage	Production
Field crops:*		
Alfalfa -- cut for hay	7,695 [†]	38,754 tons
Beans	1,800	19,242 cwt.
Grain -- barley	160,000	2,272,000 cwt.
oats	261	6,286 bushels
wheat	10,000	125,000 cwt.
Hay -- grain and volunteer	4,550	5,633 tons
Rice	17,500	612,500 cwt.
Sorghums for grain	900	27,000 bushels = 15,120 cwt.
Sugar beets	2,633	29,491 tons
Vegetable and truck crops:		
Cantaloupes ‡	50	--
Fruit and nut crops:		
Almonds	7,124	1,700 tons
Apricots	982	2,946 tons, of which about 80 per cent was dried
Grapes	928	3,700 tons, of which 800 were dried for raisins
Lemons ¶	447	51 cars = 17,748 packed boxes
Nectarines †	42	--
Peaches -- mostly freestones	86	525 tons, practically all shipped fresh
Pears	268	750 tons
Plums	35	100 tons
Prunes	4,350	10,500 tons (dry weight)**
Walnuts	480	(382,100 pounds (merchantable 34,500 pounds (culls, estimated

* Data on field crops are from various sources, based partially on the 1935 Census.

† About 1,500 acres of alfalfa were pastured and about 2,000 cut for seed, in addition to figure given.

‡ Use of seasonal labor inconsequential and hence ignored.

§ Acreages of fruit and nut crops are from H. M. Kingwill, Agr. Commissioner, Colusa County. Small acreages of the following crops have been omitted as they cause no appreciable demand for seasonal labor: apples, figs, grapefruit, olives, and oranges.

¶ Lemons handled with regular help in 1935, but ordinarily require seasonal labor for picking from November to February, inclusive. In addition, arrangements are made annually to have 50 to 100 men available on short notice for smudging if necessary in December and January.

|| Pear crop was very light in 1935. Figure is for normal crop.

** Drying ratios estimated to be as follows:

Apricots 5.5 to 1
Prunes 2.25 to 1

Operations Requiring Seasonal Labor and Times of Need.-- Farm operations requiring the use of seasonal or occasional labor for the various crops raised in Colusa County are indicated in table 2. This tabulation does not include the employing of shed workers needed to wash, pack, and prepare various commodities for shipping and marketing.

TABLE 2

Operations Requiring Use of Seasonal Labor and Times of Needs
by Crops -- Colusa County

Crop	Operation	Time of need by months	Per cent of work done by seasonal help	Output per man-day
Field crops: Alfalfa -- 5 cuttings	Mowing (by tractor)-- 1/3 of acreage	May -- 5/6 of acreage	50	25 acres with tractor
		June -- 5/6 of acreage		
		July -- 5/6 of acreage		
		August -- 5/6 of acreage		
		September -- 5/6 of acreage		
		October -- 5/6 of acreage		
		(with horses) May -- 5/6 of acreage		8 acres with horses
		-- 2/3 of acreage		
		June -- 5/6 of acreage		
		July -- 5/6 of acreage		
		August -- 5/6 of acreage		
	Raking	September -- 5/6 of acreage	50	16 acres
		October -- 5/6 of acreage		
		May -- 5/6 of acreage		
		June -- 5/6 of acreage		
		July -- 5/6 of acreage		
		August -- 5/6 of acreage		
		September -- 5/6 of acreage		
		October -- 5/6 of acreage		

Table continued on next page.

Table 2 continued.

Crop	Operation	Time of need by months	Per cent of work done by seasonal help	Output per man-day
Alfalfa (cont.)	Shocking (by hand) -- 60 per cent of acreage	May -- 5/6 of job	75	9 tons (about 9 acres)
		June -- 5/6 of job		
		July -- 5/6 of job		
		August -- 5/6 of job		
		September -- 5/6 of job		
		October -- 5/6 of job		
	Shocking (with rake) -- 40 per cent of acreage	May -- 5/6 of job	50	30 acres
		June -- 5/6 of job		
		July -- 5/6 of job		
		August -- 5/6 of job		
		September -- 5/6 of job		
		October -- 5/6 of job		
	Baling -- 90 per cent of crop	May -- 1/6 of job	50	5 tons
		June -- 1/6 of job		
		July -- 1/6 of job		
		August -- 1/6 of job		
		September -- 1/6 of job		
		October -- 1/6 of job		
Beans	Hoeing -- 1 time	June -- 25 per cent of job	100	3 acres
		July -- 25 per cent of job		
		August -- 50 per cent of job		
	Windrowing, etc. -- 50 per cent of acreage	August 15-31 -- 5 per cent of job	100	2 acres
		September 1-30 -- 20 per cent of job		
		October 1-31 -- 75 per cent of job		
	Picking up after rakes -- 50 per cent of acreage	August 15-31 -- 5 per cent of job	100	10 acres
		September 1-30 -- 20 per cent of job		
		October 1-31 -- 75 per cent of job		
Grain	Threshing (by pick-up harvester)	August -- 5 per cent of crop	50	5 acres
		September -- 20 per cent of crop		
		October -- 75 per cent of crop		
	Threshing (with combine)	June 15-30 -- 20 per cent of acreage	60	7 acres
		July 1-31 -- 40 per cent of acreage		
		August 1-31 -- 40 per cent of acreage		
Hay -- other than alfalfa	Mowing	May 1-31 -- 90 per cent of crop	50	8 acres
	Raking	June 1-7 -- 10 per cent of crop		16 acres
	Shocking			30 acres

Table continued on next page.

Table 2 continued.

Crop	Operation	Time of need by months	Per cent of work done by seasonal help	Output per man-day
Rice	Cutting (with direct combine) -- 10 per cent of acreage	September 15-30 -- 10 per cent of job	75	150 cwt. = 4.3 acres
		October 1-31 -- 80 per cent of job		
		November 1-15 -- 10 per cent of job		
	Windrowing -- 75 per cent of acreage	September 15-30 -- 20 per cent of job	100	20 acres
		October 1-31 -- 80 per cent of job		
	Threshing (with pick-up) -- 75 per cent of acreage	September 20-30 -- 10 per cent of job	75	150 cwt. = 4.3 acres
		October 1-31 -- 80 per cent of job		
		November 1-15 -- 10 per cent of job		
	Cutting (with binder) -- 15 per cent of acreage	September 15-30 -- 20 per cent of job	100	4 acres
		October 1-31 -- 80 per cent of job		
	Shocking bundles -- 15 per cent of acreage	September 15-30 -- 20 per cent of job	100	3 acres
		October 1-31 -- 80 per cent of job		
	Threshing (with stationary) -- 15 per cent of crop	September 20-30 -- 10 per cent of job	100	50 cwt.
		October 1-31 -- 80 per cent of job		
		November 1-15 -- 10 per cent of job		
Sorghums -- for grain	Hauling	September 20-30 -- 10 per cent of job	50	500 cwt.
		October 1-31 -- 80 per cent of job		
		November 1-15 -- 10 per cent of job		
	Cutting (by hand) -- 75 per cent of acreage	September 1-30 -- 20 per cent of job	100	0.75 acre
		October 1-31 -- 80 per cent of job		
	Threshing (with stationary) -- 75 per cent of crop	October 1-31 -- 80 per cent of job	66	100 sacks = 13,000 pounds
		November 1-20 -- 20 per cent of job		
	Harvesting (with combine) -- 25 per cent of acreage	October 1-31 -- 80 per cent of job	50	5 acres
		November 1-20 -- 20 per cent of job		

Table continued on next page.

Table 2 continued.

Crop	Operation	Time of need by months	Per cent of work done by seasonal help	Output per man-day
Sugar beets	Thinning	March 1-31 -- 16 per cent of acreage	100	0.5 acre
		April 1-30 -- 66 per cent of acreage		
		May 1-31 -- 18 per cent of acreage		
	Hoeing -- first time second time Topping and loading	April 1-30 -- all of acreage	100	1 acre
		May 1-31 -- all of acreage	100	2 acres
		July 7-31 -- 10 per cent of crop	100	5 tons
		August 1-31 -- 40 per cent of crop		
		September 1-30 -- 26 per cent of crop		
		October 1-31 -- 24 per cent of crop		
Fruit and nut crops: Almonds	Pruning	November -- 50 per cent of acreage	50	3 acres
		December -- 50 per cent of acreage		
	Brush burning Knocking	-- mostly by regular help.	100	0.5 acre
		August 1-31 -- 2/3 of crop		
	Hulling (by machine)	September 1-30 -- 1/3 of crop	80	400 pounds
		August 1-31 -- 2/3 of crop		
Apricots	Pruning	September 1-30 -- 1/3 of crop	75	0.2 acre
		November 1-30 -- 25 per cent of acreage		
		December 1-31 -- 25 per cent of acreage		
		January 1-31 -- 25 per cent of acreage		
		February 1-28 -- 25 per cent of acreage		
	Brush burning	November 1-30 -- 25 per cent of acreage	50	2.5 acres
		December 1-31 -- 25 per cent of acreage		
		January 1-31 -- 25 per cent of acreage		
		February 1-28 -- 25 per cent of acreage		
	Thinning (by hand)	April 15-30 -- 50 per cent of acreage	100	0.5 acre
		May 1-15 -- 50 per cent of acreage		
	Picking	June 15-30 -- all of crop	100	1,200 pounds
	Cutting (for drying)	June 15-30 -- all of crop	100	1,000 pounds

Table continued on next page.

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Table 2 continued.

Crop	Operation	Time of need by months	Per cent of work done by seasonal help	Output per man-day
Apricots (cont.)	Other dry-yard labor	June 15-30 -- 75 per cent of job July 1-7 -- 25 per cent of job	100	11 man-hours per fresh ton*
Grapes	Pruning	January -- 50 per cent of acreage February -- 50 per cent of acreage	100	0.66 acre
	Brush burning	January -- 50 per cent of acreage February -- 50 per cent of acreage	50	2.0 acres
	Picking	September 1-30 -- all of crop	100	2,500 pounds
Peaches	Pruning	January 1-31 -- all of acreage	75	0.25 acre
	Brush burning	January 1-31 -- all of acreage	75	2.5 acres
	Thinning	May 1-31 -- all of acreage	100	0.2 acre
	Picking	August 1-31 -- all of crop	100	3,000 pounds
Pears	Pruning	January -- 1/3 of acreage February -- 1/3 of acreage March -- 1/3 of acreage	85	1/7 acre
	Brush burning	January -- 1/3 of acreage February -- 1/3 of acreage March -- 1/3 of acreage	50	2.5 acres
	Picking	July -- 8 per cent of crop August -- 92 per cent of crop	100	1,500 pounds
Plums	Picking	July -- 50 per cent of crop August -- 50 per cent of crop	100	800 pounds
Prunes	Pruning -- 25 per cent of acreage	November -- 25 per cent of acreage December -- 25 per cent of acreage January -- 25 per cent of acreage February -- 25 per cent of acreage	80	0.5 acre
	Brush burning	November -- 25 per cent of acreage December -- 25 per cent of acreage January -- 25 per cent of acreage February -- 25 per cent of acreage	50	2.5 acres
	Picking up	August 1-31 -- 25 per cent of crop September 1-30 -- 75 per cent of crop	100	1 ton

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Table 2 continued.

Crop	Operation	Time of need by months	Per cent of work done by seasonal help	Output per man-day
Prunes (cont.)	Dipping and drying (in dehydrators) -- 60 per cent of crop (in sun) -- 40 per cent of crop	August 1-31 -- 25 per cent of job	80	6 man-hours per fresh ton†
		September 1-30 -- 75 per cent of job		
		August 1-31 -- 25 per cent of job	80	8.3 man-hours per fresh ton*
		September 1-30 -- 75 per cent of job		
Walnuts	Knocking and picking up	September 24-30 -- 15 per cent of crop	90	200 pounds
		October 1-31 -- 75 per cent of crop		
		November 1-15 -- 10 per cent of crop		

*From Christie, A. W. and L. C. Barnard. The principles and practice of sun-drying fruit. California Agr. Exp. Sta. Bul. 388:40-60. 1925.

†From Christie, A. W., revised by P. F. Nichols. The dehydration of prunes. California Agr. Exp. Sta. Bul. 404:7. 1929.

Findings of Seasonal Labor Needs.-- Details and summaries of seasonal labor requirements of Colusa County agriculture are presented as table 3. The "size of task" are figures drawn from table 1, in terms of either acreage or output in tons, crates, boxes, or whatever unit is commonly used. The "output per man-day" is an average figure for the entire acreage or output figured in crates, hampers, boxes, or other units as indicated in the table. If the work is of a nature that requires a crew, different members of which perform different tasks, then the average shown is per man based on the entire crew. Length of day is 9 hours, November to February; 10 hours March to October, unless otherwise stated. Wide variations in output occur between farm and farm, field and field, and season and season, because of differences in soil types, climatic conditions, weeds, yields, and other factors influencing the amount of work that a laborer can perform in a given day. Moreover, the basis of output is a mature, experienced male worker without reference to use of women, children, and more or less inexperienced help that is sometimes used in connection with certain of the tasks requiring use of seasonal workers. The column headed "available days" reflects (a) limitations set from the period within which the work must be performed because of the nature of the task, such as transplanting, thinning, weeding, and cutting, and (b) available days as determined by weather conditions, inclement weather reducing the number of days when a required task can be performed. The "required number of individuals" is given in terms of workers as noted above in connection with "output per man-day."

It is probable that the estimated number of workers required, as recorded in table 3, will often be too low, for the reason that "peaks" frequently occur, during which an unusually large proportion of the job is done in a very short period. This would naturally require a much greater number of workers than when the work is spread over a longer period, even though the total amount of labor (in man-days) remains the same.

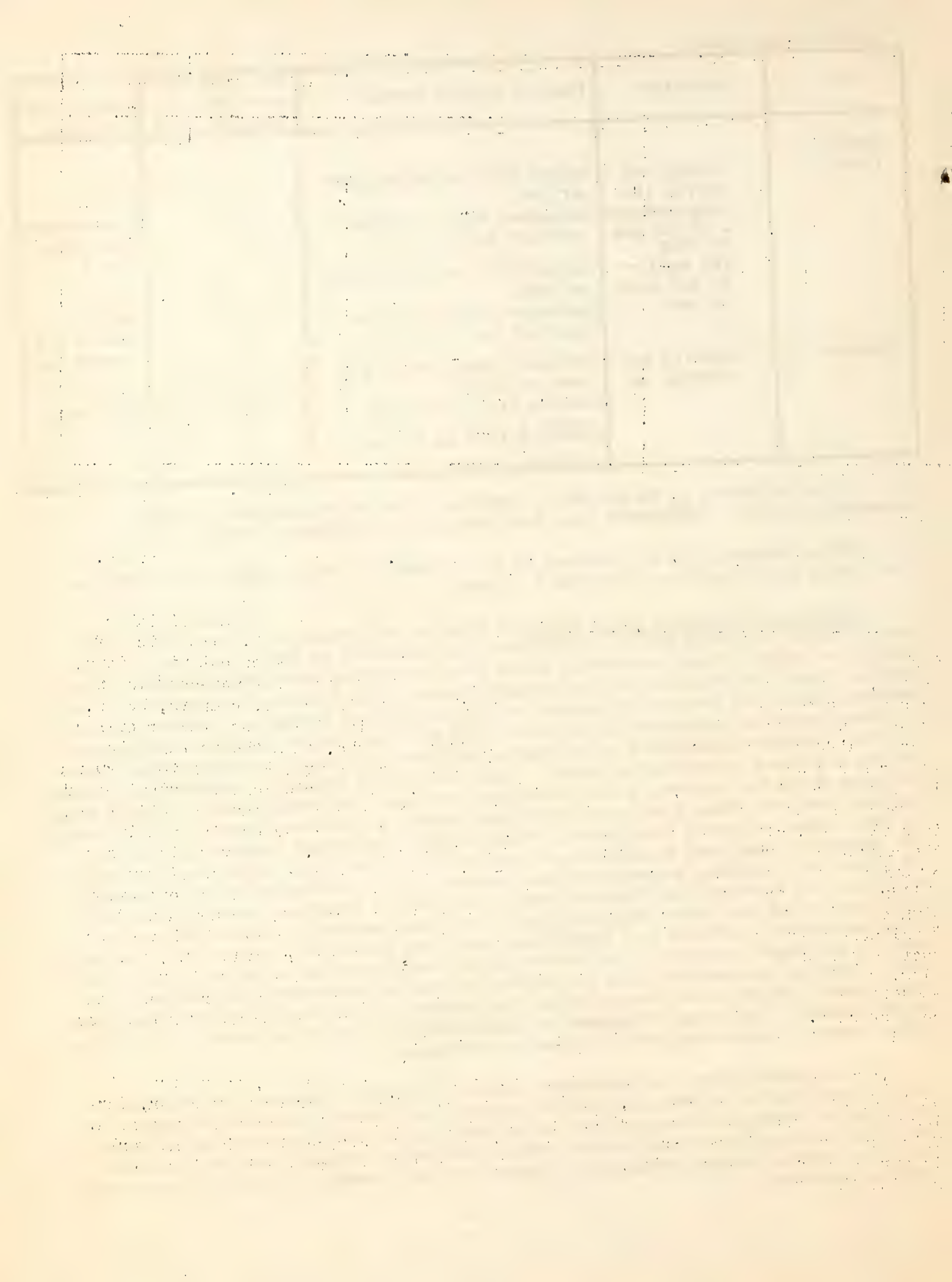


TABLE 3

Seasonal Labor Needs -- Colusa County -- by Months and Tasks

Month	Crop and task	Size of task	Output per man-day	Required man-days	Available days	Required number of workers*
January	Apricots: Pruning	184 acres†	0.2 acre	920	18	52
	Brush burning	123 acres†	2.5 acres	50	18	3
	Grapes: Pruning	464 acres	0.66 acre	703	18	40
	Brush burning	232 acres†	2.0 acres	116	18	7
	Peaches: Pruning	65 acres†	0.25 acre	260	18	15
	Brush burning	65 acres†	2.5 acres	26	18	2
	Pears: Pruning	76 acres†	0.14 acre	543	18	31
	Brush burning	45 acres†	2.5 acres	18	18	1
	Prunes: Pruning	217 acres†	0.5 acre	434	18	25
	Brush burning	136 acres†	2.5 acres	55	18	4
February	Totals			3,125	18	174 man-months
	Apricots: Pruning	184 acres†	0.2 acre	920	19	49
	Brush burning	123 acres†	2.5 acres	50	19	3
	Grapes: Pruning	464 acres	0.66 acre	703	19	37
	Brush burning	232 acres†	2.0 acres	116	19	7
	Pears: Pruning	76 acres†	0.14 acre	543	19	29
	Brush burning	45 acres†	2.5 acres	18	19	1
	Prunes: Pruning	217 acres†	0.5 acre	434	19	23
	Brush burning	136 acres†	2.5 acres	55	19	3
	Totals			2,839	19	150 man-months
March	Sugar beets: Thinning	421 acres	0.5 acre	842	21	41
	Pears: Pruning	76 acres	0.14 acre	543	21	26
	Brush burning	45 acres	2.5 acres	18	21	1
	Totals			1,403	21	67 man-months
April	Sugar beets: Thinning	1,738 acres	0.5 acre	3,476	22	158
	Hoing -- first time	2,633 acres	1.0 acre	2,633	22	120
	Apricots: Thinning (by hand)	491 acres	0.5 acre	982	11	90 (April 15-30)
	Totals			7,091	22	323 man-months
May	Alfalfa: Mowing (by tractor)	1,069 acres†	25 acres	43	25	2
	Mowing (by team)	2,138 acres†	8 acres	268	25	11
	Raking	3,207 acres†	16 acres	201	25	9

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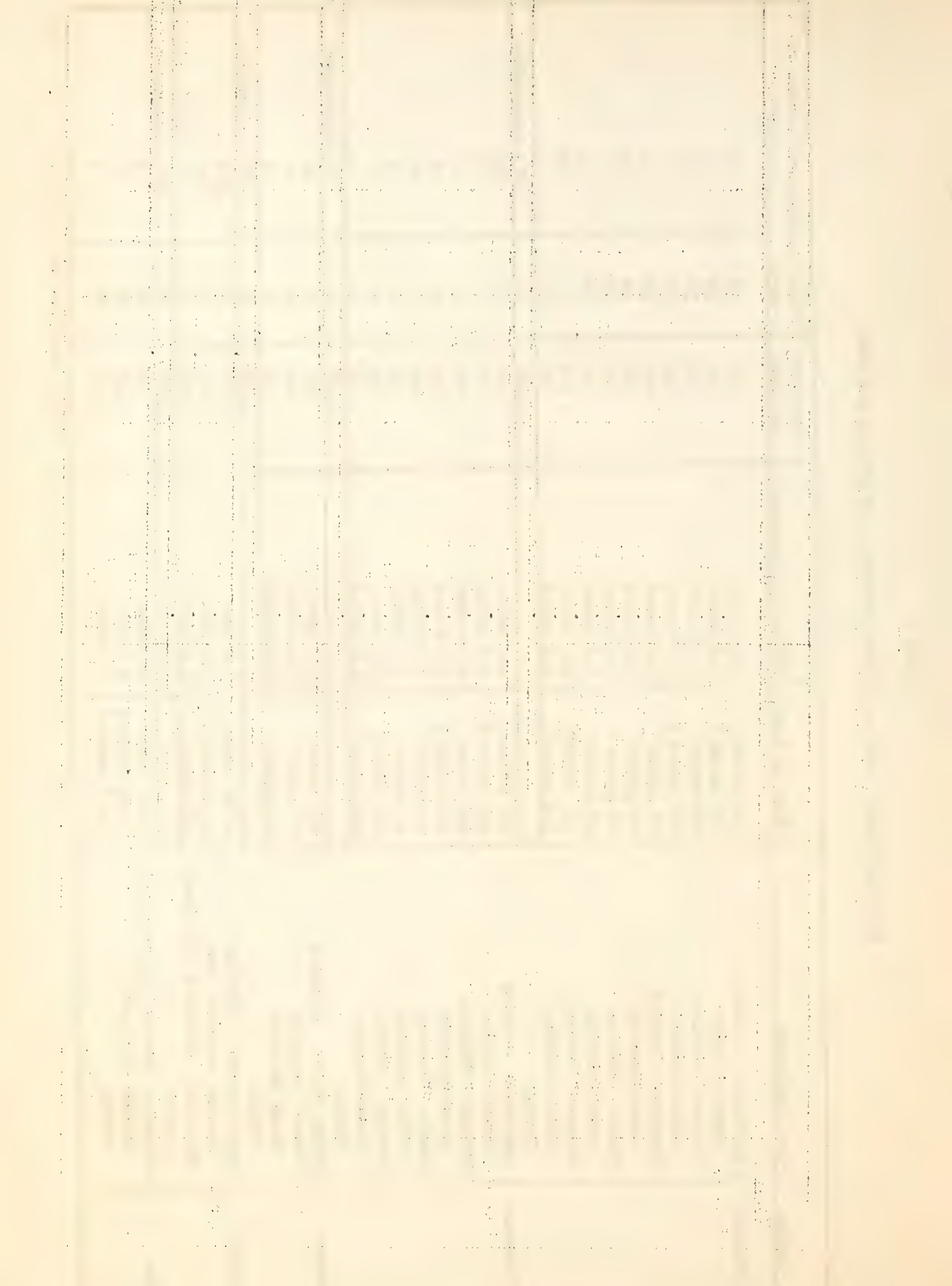


Table 3 continued.

Month	Crop and task	Size of task	Output per man-day	Required man-days	Available days	Required number of workers*
May (cont.)	Alfalfa: (cont.)					
	Shocking (by hand)	2,848 acres†	9 acres	317	25	13
	Shocking (with rake)	1,266 acres†	30 acres	43	25	2
	Baling	5,813 tons†	5 tons	1,163	25	47
	Hay -- grain and volunteer:					
	Mowing	2,047 acres†	8 acres	256	25	11
	Raking	2,047 acres†	16 acres	128	25	6
	Shocking	2,047 acres†	30 acres	69	25	3
	Sugar beets: Thinning	474 acres	0.5 acre	948	25	38
	Hoing -- second time	2,633 acres	2.0 acres	1,317	25	53
	Apricots: Thinning (by hand)	491 acres	0.5 acre	982	12	82 (May 1-15)
	Peaches: Thinning	86 acres	0.2 acre	430	25	18
June	Totals			6,165	25	247 man-months
	Alfalfa: Mowing (by tractor)					
	Mowing (by team)	1,069 acres†	25 acres	43	26	2
	Raking	2,138 acres†	8 acres	268	26	11
	Shocking (by hand)	3,207 acres†	16 acres	201	26	8
	Shocking (with rake)	2,848 acres†	9 acres	317	26	13
	Baling	1,266 acres†	30 acres	43	26	2
	Beans: Hoing -- one time	5,813 tons†	5 tons	1,163	26	45
	Grain -- barley, oats, wheat:	450 acres	3.0 acres	150	26	6
	Threshing (with combine)					
	Hay -- grain and volunteer:					
	Mowing	20,431 acres†	7.0 acres	2,929	13	225 (June 15-30)
July	Raking	227 acres†	8 acres	29	6	5 (June 1-7)
	Shocking	227 acres†	16 acres	15	6	3 (June 1-7)
	Apricots: Picking	227 acres†	30 acres	8	6	2 (June 1-7)
	Cutting for drying	2,946 tons	1,200 pounds	4,910	13	378 (June 15-30)
	Other dry-yard labor	2,357 tons	1,000 pounds	4,714	13	363 (June 15-30)
	Totals	1,768 tons	†	1,943	13	150 (June 15-30)
	Alfalfa: Mowing (by tractor)					
	Mowing (by team)	1,069 acres†	25 acres	43	26	2
	Raking	2,138 acres†	8 acres	268	26	11
	Shocking (by hand)	3,207 acres†	16 acres	201	26	8
	Shocking (with rake)	2,848 acres†	9 acres	317	26	13
		1,266 acres†	30 acres	43	26	2

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Table 3 continued.

Month	Crop and task	Size of task	Output per man-day	Required man-days	Available days	Required number of workers*
July (cont.)	Alfalfa: (cont.)					
	Baling	5,813 tons †	5 tons	1,163	26	45
	Beans: Hoeing -- one time	450 acres	3.0 acres	150	26	6
	Grain -- barley, oats, wheat:					
	Threshing (with combine)	40,863 acres †	7.0 acres	5,838	26	225
	Sugar beets: Topping and loading	2,949 tons	5.0 tons	590	21	29 (July 7-31)
	Apricots: Other dry-yard labor	589 tons	†	647	6	108 (July 1-7)
	Pears: Picking	60 tons	1,500 pounds	80	26	4
	Plums: Picking	50 tons	800 pounds	125	26	5
	Totals			9,465	26	365 man-months
August	Alfalfa: Mowing (by tractor)	1,069 acres †	25 acres	43	26	2
	Mowing (by hand)	2,138 acres †	8 acres	268	26	11
	Raking	3,207 acres †	16 acres	201	26	8
	Shocking (by hand)	2,848 acres †	9 acres	317	26	13
	Shocking (with rake)	1,266 acres †	30 acres	43	26	2
	Baling	5,813 tons †	5 tons	1,163	26	45
	Beans: Hoeing -- one time	900 acres	3.0 acres	300	26	12
	Windrowing, etc.	45 acres	2.0 acres	23	13	2 (Aug. 15-31)
	Picking up after rakes	45 acres	10.0 acres	5	13	1 (Aug. 15-31)
	Threshing (by pick-up harvester)	45 acres	5.0 acres	9	13	1 (Aug. 15-31)
	Grain -- barley, oats, wheat:					
	Threshing (with combine)	40,863 acres †	7.0 acres	5,838	26	225
	Sugar beets: Topping and loading	11,796 tons	5.0 tons	2,360	26	91
	Almonds: Knocking	4,749 acres	0.5 acre	9,498	26	366
	Hulling (by machine)	907 tons †	400 pounds	4,535	26	175
	Peaches: Picking	525 tons	3,000 pounds	350	26	14
	Pears: Picking	690 tons	1,500 pounds	920	26	36
	Plums: Picking	50 tons	800 pounds	125	26	5
	Prunes: Picking up	5,906 tons	1.0 ton	5,906	26	228
	Dipping and drying (in dehydrators)	2,835 tons †	†	1,698	26	66
	Dipping and drying (in sun)	1,890 tons †	†	1,575	26	61
	Totals			35,177	26	1,353 man-months

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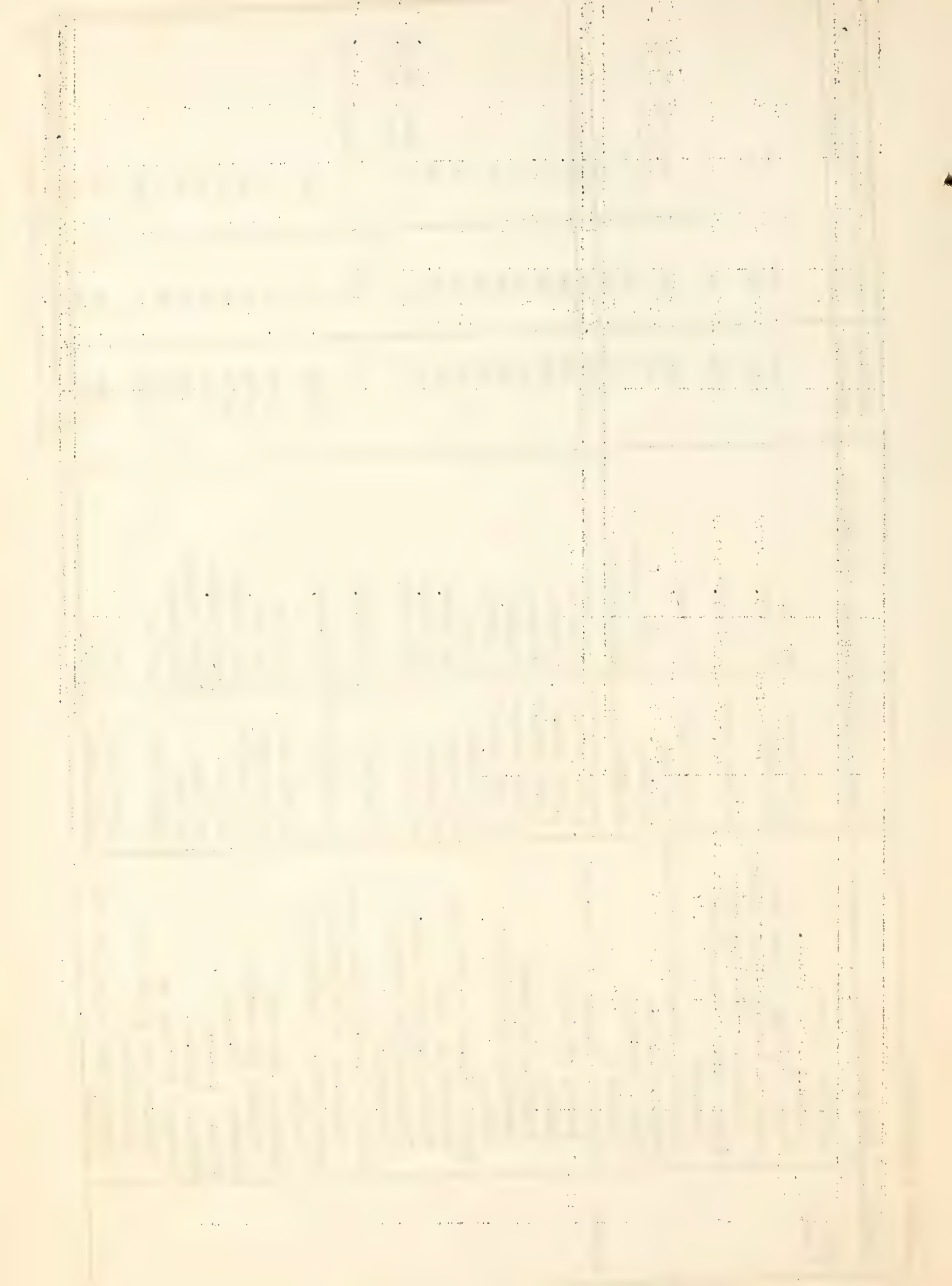


Table 3 continued.

Month	Crop and task	Size of task	Output per man-day	Required man-days	Available days	Required number of workers*
September	Alfalfa: Mowing (by tractor)	1,069 acres†	25 acres	43	26	2
	Mowing (by team)	2,138 acres†	8 acres	268	26	11
	Raking	3,207 acres†	16 acres	201	26	8
	Shocking (by hand)	2,848 acres†	9 acres	317	26	13
	Shocking (with rake)	1,266 acres†	30 acres	43	26	2
	Baling	5,813 tons†	5 tons	1,163	26	45
	Beans: Windrowing, etc.	180 acres	20 acres	90	26	4
	Picking up after rakes	180 acres	10.0 acres	18	26	1
	Threshing (by pick-up harvester)	180 acres†	5.0 acres	36	26	2
	Rice: Cutting (with direct combine)	131 acres†	4.3 acres	31	13	3 (Sept. 15-30)
	Windrowing	2,625 acres	20.0 acres	132	13	11 (Sept. 15-30)
	Threshing (with pick-up)	984 acres†	4.3 acres	229	9	26 (Sept. 20-30)
	Cutting (with binder)	525 acres	4.0 acres	132	13	11 (Sept. 15-30)
	Shocking bundles	525 acres	3.0 acres	175	13	14 (Sept. 15-30)
	Threshing (with stationary)	9,188 cwt.	50 cwt	184	9	21 (Sept. 20-30)
	Hauling	30,625 cwt.	500 cwt.	62	9	7 (Sept. 20-30)
	Sorghums -- for grain: Cutting by hand	135 acres	0.75 acre	180	26	7
	Sugar beets: Topping and loading	7,668 tons	5.0 tons	1,534	26	59
	Almonds: Knocking	2,375 acres	0.5 acre	4,750	26	183
	Hulling (by machine)	453 tons	400 pounds	2,265	26	88
October	Grapes: Picking	3,700 tons	2,500 pounds	1,645	26	64
	Prunes: Picking up	17,719 tons	1.0 ton	17,719	26	682
	Dipping and drying (in dehydrators)	8,505 tons†	†	5,093	26	196
	Dipping and drying (in sun)	5,670 tons†	†	4,725	26	182
	Walnuts: Knocking and picking up	56,241 pounds	200 pounds	282	5	57 (Sept. 24-30)
	Totals			41,317	26	1,590 man-months
	Alfalfa: Mowing (by tractor)	1,069 acres†	25 acres	43	24	2
	Mowing (by team)	2,138 acres†	8 acres	268	24	12
	Raking	3,207 acres†	16 acres	201	24	9

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1900

1. The first of the year was a very cold day.

2. The second of the year was a very cold day.

3. The third of the year was a very cold day.

4. The fourth of the year was a very cold day.

5. The fifth of the year was a very cold day.

6. The sixth of the year was a very cold day.

Table 3 continued.

Month	Crop and task	Size of task	Output per man-day	Required man-days	Available days	Required number of workers*
October (cont.)	Alfalfa: (cont.)					
	Shocking (by hand)	2,848 acres†	9 acres	317	24	14
	Shocking (with rake)	1,266 acres†	30 acres	43	24	2
	Baling	5,813 tons†	5 tons	1,163	24	49
	Beans: Windrowing, etc.	675 acres	2.0 acres	338	24	15
	Picking up after rakes	675 acres	10.0 acres	68	24	3
	Threshing (by pick-up harvester)	675 acres	5.0 acres	135	24	6
	Rice: Cutting (with direct combine)	1,050 acres†	4.3 acres	245	24	11
	Windrowing	10,500 acres	20.0 acres	525	24	22
	Threshing (with pick-up)	7,875 acres	4.3 acres	1,832	24	77
	Cutting (with binder)	2,100 acres	4.0 acres	525	24	22
	Shocking bundles	2,100 acres	3.0 acres	700	24	30
	Threshing (with stationary)	73,500 cwt.†	50 cwt.	1,470	24	62
	Hauling	245,000 cwt.†	500 cwt.	490	24	21
	Sorghums -- for grain: Cutting (by hand)	540 acres	0.75 acre	720	24	30
	Threshing (with stationary)	5,988 cwt.†	130 cwt.	47	24	2
	Harvesting (with combine)	90 acres†	5.0 acres	18	24	1
	Sugar beets: Topping and loading	7,078 tons	5.0 tons	1,416	24	59
	Walnuts: Knocking and picking up	281,205 pounds	200 pounds	1,407	24	59
	Totals			11,971	24	499 man-months
November	Rice: Cutting (with direct combine)	131 acres†	4.3 acres	31	22	2
	Threshing (with pick-up)	984 acres†	4.3 acres	229	11	21 (Nov. 1-15)
	Threshing (with stationary)	9,187 cwt.	50 cwt.	184	11	17 (Nov. 1-15)
	Hauling	30,625 cwt†	500 cwt.	62	11	6 (Nov. 1-15)
	Sorghums -- for grain: Threshing (with stationary)	1,497 cwt.†	130 cwt.	12	15	1 (Nov. 1-20)
	Harvesting (with combine)	23 acres†	5 acres	5	15	1 (Nov. 1-20)
	Almonds: Pruning	1,781 acres†	3.0 acres	594	22	27

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22 10
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2. 1. 1900

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Table 3 continued.

Month	Crop and task	Size of task	Output per man-day	Required man-days	Available days	Required number of workers*
November (cont.)	Apricots: Pruning	184 acres†	0.2 acre	920	22	42
	Brush burning	123 acres†	2.5 acres	50	22	3
	Prunes: Pruning	218 acres†	0.5 acre	436	22	20
	Brush burning	136 acres†	2.5 acres	55	22	3
	Walnuts: Knocking and picking up	37,494 pounds†	200 pounds	188	11	18 (Nov. 1-15)
	Totals			2,766	22	126 man-months
December	Almonds: Pruning	1,781 acres†	3.0 acres	594	18	33
	Apricots: Pruning	184 acres	0.2 acre	920	18	52
	Brush burning	123 acres	2.5 acres	50	18	3
	Prunes: Pruning	218 acres†	0.5 acre	436	18	25
	Brush burning	136 acres†	2.5 acres	55	18	4
	Totals			2,055	18	115 man-months

* On a monthly basis unless otherwise noted.

† Estimated portion of the job done by seasonal workers.

‡ Dry-yard labor, other than cutting, estimated to be as follows:

Apricots	--	11 man-hours per fresh ton.
Prunes	--	6 man-hours per fresh ton with dehydrator.
Prunes	--	8.3 man-hours per fresh ton by sun.

TABLE 4
Summary of Seasonal Labor Needs by Months
Colusa County
1935

Month	Required man-days of seasonal labor	Available work days	Required man-months of seasonal labor
January	3,125	18	174
February	2,839	19	150
March	1,403	21	67
April	7,091	22	323
May	6,165	25	247
June	16,723	26	644
July	9,465	26	365
August	35,177	26	1,353
September	41,317	26	1,590
October	11,971	24	499
November	2,766	22	126
December	2,055	18	115
Total	140,097	---	5,653

Notes

Notes on Table 2.-- Data concerning "time of need" as shown in this table break down required seasonal labor into the period in which the work is performed in order to permit a subsequent determination of labor needs by months (table 3). Some operations are performed only to a limited extent with seasonal labor. For instance, only about 60 per cent of the labor in harvesting grain is done by seasonal workers. When a job extends over several different months, the proportionate amount for each month is shown.

The amount of work done each month is based on the cropping system followed during 1935. The allotting of amounts of work is based on findings concerning local farm practices, and required time to "make" a crop resulting from inquiry of producers, and records of carlot shipments, the latter proving helpful in fixing dates of planting and of subsequent tasks involved in producing certain crops. Proportionate amounts of output harvested each month were determined from data of local practices with respect to harvesting, and from carlot shipments of perishable products. Records of truck shipments were also used when available.

Notes on Table 3.-- Table 3 is the condensed summary of labor needs as worked out for Colusa County as a result of findings pertinent to 1935. The data are presented by months with the tasks which were performed in each month indicated by both crop and task. The size of the job was calculated from the data appearing in table 1 (acreage and production) and table 2 (task, time of performance, and percentage of work pertinent to a given month). The output per man-day was calculated as indicated in the foreword presenting table 3. The number of required man-days is a result of dividing the size of task by output per man-day. The available days for the different tasks involve two variables. The first is the number of days when field work is possible because of favorable weather conditions.

The basis for this column was determined from a study of the monthly weather charts of the United States Weather Bureau for the years 1933, 1934, and 1935. These data indicated available days per month as follows (based on a 26-day working month without allowance for holidays):

Month	Available days	Length of work day	Month	Available days	Length of work day
		hours			hours
January	18	9	July	26	10
February	19	9	August	26	10
March	21	10	September	26	10
April	22	10	October	24	10
May	25	10	November	22	9
June	26	10	December	18	9

Source of data: Based on precipitation records of the Colusa station of the United States Weather Bureau for the years 1933, 1934, and 1935.

The second factor influencing the number of available days was the size of the job. If the output was only a few cars, then the number of days was limited to the time needed to get out those cars efficiently. If a field operation had to be performed in a period less than the number of available days in the month, then the specific number of days was noted. These restrictions are shown in parentheses. For example, in June the picking of apricots was limited to the last half of the month.

The totals of table 3 show the total required man-days of needed seasonal labor, the available days for field work during the month, and the necessary number of men (as defined in the opening paragraph of table 3) required on a monthly basis to care for the tasks ordinarily performed by seasonal workers.

Colusa County is devoted less to annual crops, the nature of which makes possible marked changes in acreage from year to year, than are many counties. However, findings as set forth in this report are bound to fluctuate materially from year to year because of variable seasonal conditions affecting yields, time of performing operations, and available days, and because of harvesting operations on certain crops being speeded up to supply a good market or retarded to avoid a poor one, resulting in marked variations in the need for harvest labor. In addition, although a good deal of the agriculture of the county is not of an annual nature, market outlook would have some effect upon what and how much acreage is planted, and thus have an effect upon the demand for seasonal labor.

